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Time Resolved Filtered Rayleigh Scattering Measurement of a Centrifugally Loaded Buoyant Jet

By Firas Benhassen

Biblioscholar Okt 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x8 mm. This item is printed on demand - Print on Demand Neuware - The combustion process within the Ultra-Compact Combustor (UCC) occurs in the circumferential direction. The presence of variable flow density within the circumferential cavity introduces significant buoyancy issues. On the other hand, G-loading caused by the presence of centrifugal forces, ensures the circulation of the flow in the circumferential cavity and enhances the completion of the combustion process before allowing the exit of the hot gases to the main flow. The coupling between buoyancy and high G-loading is what predominately influences the behavior of the flow within the UCC. In order to better understand the combustion process within the UCC, three different experiments were run. The overall objective of these experiments is to investigate the effects of both buoyancy and G-loading on the trajectory and the mixing of a jet in a co-flow. The first experiment involved setting up the Filtered Rayleigh scattering (FRS) technique to be used in this research. Then, using horizontal and curved sections, two types of experiments were run to characterize and measure both G-loading and buoyancy effects on the overall behavior of a jet...



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